Remarks

This paper is responsive to the Notice of Non-Compliant Amendment (37 CFR 1.121) of March 5th, 2009. All rejections and objections of the Examiner are traversed.

Specification

With regard to Section 4 of the final action dated 08/29/2008, the Examiner stated that "The substitute specification filed April 29, 2008 <u>has not been entered</u> because it does not conform to 37 CFR 1.125(b) and (c) because new matter has been added. Paragraphs [0023]-[0029] introduce a computer-readable medium."

Unfortunately, the Applicant interprets the Examiner's statement to mean that **the entire** <u>substitute specification filed April 29, 2008</u> (for paragraphs [0009] to [0037]; paragraphs [0060] to [0069], [0087], [0094], [0097], [0151], [0168], [0169], and [0172]; and the ABSTRACT) <u>has not been entered</u>. Consequently, the substitute specification filed October 27, 2008 incorporated the substitute specification filed April 29, 2008, which caused confusion and resulted in the Notice of Non-Compliant Amendment (37 CFR 1.121) of March 5th, 2009. To rectify the problem, the Applicant withdraws the substitute specification filed on October 27, 2008.

Presently, the Applicant understands that the substitute specification filed on April 29th, 2008 **has been entered** for paragraphs [0009] to [0022] and [0030] to [0037]; [0060] to [0069], [0087], [0094], [0097], [0151], [0168], [0169], and [0172]; and the ABSTRACT. Clean copies of amended paragraphs [0009] to [0022] and [0030] to [0037]; [0060] to [0069], [0087], [0094], [0097], [0151], [0168], [0169], and [0172]; and the ABSTRACT are enclosed for the Examiner's convenience (37 CFR 1.125 (c)).

Further, the Applicant understands that the substitute specification filed on April 29th, 2008 **has not been entered** for paragraphs [0023]-[0029]. Paragraphs [0023] to [0029] have been deleted without prejudice to overcome the Examiner's objection.

On page 2 of this paper, "AMENDMENTS TO THE SPECIFICATION", paragraphs [0012], [0021], [0022], [0030], [0032], [0033], and [0061] have been amended to correct minor editorial problems (37 CFR 1.121 (b) (1) (ii) and 1.125 (b) and (c)). A new paragraph [0035.1] is added after paragraph [0035] to capture a

feature of the present invention (37 CFR 1.121 (b) (1) (iii)). Paragraphs [0023] to [0029] have been deleted (37 CFR 1.121 (b) (1) (iv)). The substitute specification in this paper conforms to 37 CFR 1.121, 1.125 (b) and (c), and MPEP § 714.

5   In view of the above amendments and remarks, and having dealt with all of the matters raised by the Examiner, early reconsideration and allowance of this application is respectfully requested.

Respectfully submitted,

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APPENDIX

Clean copies of the substitute specification filed April 29, 2008

5   [0009]   The invention, therefore, according to one aspect provides an operations, management, capacity, and services (OMCS) tool for assessing business solutions comprising alternative network architectures and management processes for a telecommunications network. The tool comprises means for inputting data and options for plurality of network architectures and management processes by an

10   analyst; and means for engineering the plurality of network architectures and the management processes based on the input data and options. The management processes comprise network management processes and service and customer management processes for managing the plurality of network architectures. The tool also comprises means for determining suppliers' equipment and management

15   processes costs for the plurality of network architectures and the network management processes and the service and customer management processes. The tool comprises means for determining, based on the costs of the plurality of network architectures and the management processes, business parameters for the business solutions; and means for storing or displaying the business parameters for the business solutions for the

20   telecommunications network.

      [0010]   The means for determining the business parameters comprise means for computing total expenditure; and wherein the total expenditure comprises capital expenditure (CAPEX) and operational expenditure (OPEX). The CAPEX comprises a

25   network architecture cost; taxes; interests; and depreciation and amortization (D/A) expenses. The OPEX comprises a management processes cost; a leasing cost; and sales, general and administration (SG&A) expenses.

      [0011]   The business parameters further comprise financial statistics comprising

30   revenue; capacity; return on investment (ROI); earnings before interest, taxes, and depreciation and amortization (EBITDA); earnings before interest and taxes (EBIT); OPEX as percentage of revenue; and total expenditure as percentage of revenue. The

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means for determining the business parameters comprises means for computing the business parameters for the business solutions over a pre-determined study period and storing or displaying the business parameters in tables and graphical charts for the business solutions over the pre-determined study period.

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[0012]   The OMCS tool comprises means for inputting traffic data; customer data; and financial and labour data; and means for inputting technology options comprising one or more of the following technology: TDM, ATM, FR, IP, VPN, MPLS, and optical Ethernet including fiber, synchronous optical network (SONET), resilience packet ring (RPR), and dense wavelength division multiplexing (DWDM), for a network architecture for a business solution; and means for inputting management processes options for the network management processes and the service and customer management processes for managing the network architecture for the business solution.

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[0013]   The OMCS tool comprises means for validating and calibrating the input data and options and the costs for the plurality of network architectures and the management processes for the business solutions.

20   [0014]   The OMCS tool comprises means for engineering the network architecture for the business solution; and means for determining a network architecture cost and a leasing cost for the network architecture for the business solution.

25   [0015]   The means for engineering the network architecture comprises means for determining an owned network elements (NEs) count; a leased NEs count; an owned customer premise equipment (CPE) count; a leased CPE count; an owned links count; a leased links count; and a leased ports count. The network architecture comprises NEs, CPE, and links from the same or different equipment suppliers.

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[0016]   The means for determining the network architecture cost comprises means for determining an owned cost (a price) per network element (NE), a footprint

per NE cost, a power consumption per NE cost; an owned cost (a price) per CPE, a footprint per CPE cost, a power consumption per CPE cost; an owned cost (a price) per link and a link transmission rate.

5   [0017]   The means for determining the network architecture cost further comprises means for computing a total owned NEs cost; a total owned CPE cost; and a total owned links cost for the network architecture for the business solution.

[0018]   The means for determining the leasing cost comprises means for

10   determining a leased per NE cost, a footprint per NE cost, a power consumption per NE cost; a leased per CPE cost, a footprint per CPE cost, a power consumption per CPE cost; a leased per link cost; a leased link per unit length cost, a unit length per link count, and a link transmission rate; and a leased per port cost. This means further comprises means for computing a total leased NEs cost; a total leased CPE cost; a

15   total footprints cost and a total power consumptions cost for the NEs and CPE; a total leased links cost; a total leased links per unit length cost; and a total leased ports cost for the network architecture for the business solution.

[0019]   The OMCS tool comprises means for engineering the management

20   processes comprising network management processes; and service and customer management processes having processes from the same or different management processes suppliers for managing the network architecture for the business solution. It also comprises means for determining a management processes cost comprising a network management processes cost and a service and customer management

25   processes cost.

[0020]   The means for engineering the network management processes comprises a means for engineering one or more of the following processes: inside plant maintenance; outside plant maintenance; network engineering; network

30   provisioning; installation; testing; and repairs.

[0021]   The means for engineering the service and customer management

processes comprises a means for engineering one or more of the following processes: customer relationship management (CRM); work order management (WOM); network inventory management (NAI); service activation and provisioning (SAP); fault management (FM); performance management (PM); accounting and billing; and security management.

[0022]   The means for determining the network management processes cost comprises a means for computing the network management processes cost based on whether the operations of each of the network management processes is performed using one or more of the following: a manual operations mode; a mechanized operations mode; and a manual and mechanized operations mode. The means for determining the service and customer management processes cost comprises a means for computing the service and customer management processes cost based on whether the operations of each of the service and customer management processes is performed using one or more of the following: a manual operations mode; a mechanized operations mode; and a manual and mechanized operations mode.

[0030]   A further aspect of the invention provides a computer-implemented method for assessing business solutions comprising alternative network architectures and management processes for a telecommunications network. The method comprises the steps of inputting data and options for plurality of network architectures and management processes by an analyst; and engineering the plurality of network architectures and the management processes based on the input data and options. The method comprises the steps of determining suppliers' equipment and management processes costs. The management processes comprise network management processes and service and customer management processes for managing the plurality of network architectures. The method comprises the steps of determining, based on the costs of the plurality of network architectures and the management processes, business parameters for the business solutions; and storing or displaying the business parameters for the business solutions for the telecommunications network.

[0031]   The method comprises the steps of determining the business parameters

for the business solutions over a pre-determined study period; and storing or displaying in tables and graphical charts the business parameters for the business solutions over the pre-determined study period.

[0032] The method comprises the step of validating and calibrating the data and options and the costs for the business solutions.

[0033] The method comprises the steps of inputting traffic data, customer data, and labour and financial data; inputting technology options comprising one or more of the following technology: TDM, ATM, FR, IP, VPN, MPLS, and optical Ethernet including fiber, SONET, RPR, and DWDM, for a network architecture for a business solution; and inputting management processes options for the network management processes and the service and customer management processes for managing the network architecture for the business solution.

[0034] The method comprises engineering the network architecture for the business solution; and determining a network architecture cost and a leasing cost for the network architecture for the business solution.

[0035] The method comprises engineering network management processes comprising one or more of the following processes: inside plant maintenance, outside plant maintenance, network engineering, network provisioning, installation, testing, and repairs; and engineering service and customer management processes comprising one or more of the following processes: CRM, WOM, NIM, SAP, FM, PM, accounting and billing, and security management for managing the network architecture for the business solution. The method also comprises the steps of determining a management processes cost comprising a network management processes cost and a service and customer management processes cost for the business solution based on whether the operations of these management processes is performed manually, using mechanized systems (i.e., OSS) or both based on the Service Provider operating environment.

[0036]   This invention provides an operations, management, capacity, and services (OMCS) tool and method for assessing business solutions for a telecommunications network. The business solutions comprise plurality of network architectures having various technologies and management processes for managing the plurality of network architectures. The management processes replicate today's operations and management networks for Service Providers; and the management processes cost is determined based on whether the operations of these management processes is performed manually, using mechanized systems (i.e., OSS) or both based on the Service Provider operating environment. The OMCS tool automates the calculation of the business parameters for the business solutions and enables the Service Provider to compare technology alternatives for the network architectures for the business solutions. The OMCS tool provides a comprehensive view of the business solutions for the telecommunications network that enables the Service Provider to quantify the savings of one business solution versus another and identifies the areas for cost reduction.

[0037]   Advantageously, the costs for managing and operating the network architecture are integrated with the cost of the network architecture in the total cost of the business solution and the Service Provider would be able to identify the areas for enhancing or reducing the management and operating cost of the telecommunications network. Reducing the management and operating cost of a telecommunications network is critical to the survival of the Service Provider. The embodiments of the present invention provide improved tools and methods for assessing business solutions for a telecommunications network that would overcome the shortcomings and limitations of the prior arts.

[0060]   Figure 1 shows a diagram illustrating an operations, management, capacity, and services (OMCS) tool 100 comprising input user data 110 means; engineering a plurality of network architectures 120 means; determining suppliers equipment costs 140 means; engineering management processes 130 means; determining suppliers management processes costs 150 means; validating and

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calibrating data 155 means; analyzing business parameters 160 means; and reporting business solutions 170 means.

[0061]   The input user data 110 means enables an analyst to input user data and options for a plurality of network architectures to be modeled. The input user data comprises traffic data; customer data; and financial and labour data. The options enable the analyst to select technology alternatives for network architectures and management processes for business solutions for a telecommunications network.

[0062]   The options for the technology alternatives for network architectures comprise one or more of the following: time division multiplexing (TDM), asynchronous transfer mode (ATM), frame relay (FR), Internet protocol (IP), virtual private network (VPN), multi protocol label switching (MPLS), and optical Ethernet including fiber, synchronous optical network (SONET), resilience packet ring (RPR), and dense wavelength division multiplexing (DWDM). The options for the management processes enable the analyst to select the network management processes, and service and customer management processes for managing said technology alternatives for the network architectures for the business solutions.

[0063]   The network architectures to be modeled are configured in the engineering a plurality of network architectures 120 means and network architectures data for said network architectures are determined. A network architecture cost and a leasing cost for each of said network architectures are determined by communicating with the determining suppliers equipment costs 140 means. This means communicates with suppliers' equipment database (not shown) for costing (owned and leased) network elements (NEs), customer premise equipment (CPE), and links for each of the network architectures.

[0064]   The engineering management processes 130 means engineers management processes for managing each of said network architectures and the determining supplier management processes costs 150 means determines their costs. The determining supplier management processes costs 150 means communicates with

a suppliers' management processes database (not shown) for costing each management process for network, service, and customer management.

[0065]   The validating and calibrating data 155 means validates and calibrates the data received from the input user data 110 means; the engineering a plurality of network architectures 120 means; the engineering management processes 130 means; the determining suppliers equipment costs 140 means; and the determining suppliers management processes costs 150 means, to ensure that service, customer, and network requirements and management are met in terms of quality of service (QoS) and network capacity.

[0066]   The analyzing business parameters 160 means combines the data received from the validating and calibrating data 155 means to compute business parameters for the business solutions over a pre-determined study period, wherein the pre-determined study period comprises a plurality of a pre-determined time periods, (for example, for a pre-determined time period of one year, the pre-determined study period could be five or ten years).

[0067]   The business parameters comprise total expenditure, wherein the total expenditure comprises capital expenditure (CAPEX) and operational expenditure (OPEX). The CAPEX comprises a network architecture cost, taxes, interests, and depreciation and amortization (D/A) expenses; and the OPEX comprises a management processes cost; a leasing cost; and sales, general and administration (SG&A) expenses.

[0068]   The business parameters further comprise financial and business statistics comprising revenue; capacity; return on investment (ROI); earnings before interest, taxes, and depreciation and amortization (EBITDA); earnings before interest and taxes (EBIT); OPEX as percentage of revenue; and total expenditure as percentage of revenue.

[0069]   The reporting business solutions 170 means reports in tables and graphical charts the business parameters for the business solutions over said pre-determined study period.

5   [0087]   The ARCH1 520 having switching nodes 521 and services nodes 522 from supplier A 501; add/drop nodes 523 and cross-connect nodes 524 from supplier B 502; and other nodes 525 from supplier C 503. The ARCH2 530 having switching nodes 531 and services nodes 532 from supplier A 504; add/drop nodes 533 and cross-connect nodes 534 from supplier B 505; and other nodes 535 from supplier C 10   506. The ARCH3 540 having switching nodes 541 and services nodes 542 from supplier A 507; add/drop nodes 543 and cross-connect nodes 544 from supplier B 508; and other nodes 545 from supplier C 509.

[0094]   A total footprints cost 675 is determined by multiplying the sum of the 15   owned CPE count 650 and the leased CPE count 663 by the footprint per CPE cost 670. A total owned CPE cost 660 is determined by multiplying the owned CPE count 650 by the price per CPE 655. A total leased CPE cost 680 is determined by multiplying the leased CPE count 663 by the leased per CPE cost 665. A total power consumptions cost 690 is determined by multiplying the sum of the owned CPE count 20   650 and the leased CPE count 663 by the power consumption per CPE cost 685.

[0097]   The ARCH1 720 having T1 721 and T3 722 links from supplier A 701; E1 723 and E3 724 links from supplier B 702; and DSL links 725, 10/100 BT 726, and 100/1000 BT 727 links from supplier C 703. The ARCH2 730 having fiber 25   100FX 731 from supplier A 704; OC3 732, OC12 733, OC48 734, and OC 192 links 735 from supplier B 705; and DWDM ring 736, RPR ring 737, and 1000SX/1000LX 738 from supplier C 706. The ARCH3 740 having SONET ring 741 and microwave 742 links from supplier A 707; fiber 100 FX 743 and 100/1000 BT 744 links from supplier B 708; and DSL 745 and T3 746 links from supplier C 709.

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[0151]   Procedure 1700 adjusts and updates data (block 1780) as required and re-analyzes the business parameters (block 1740). When analysis is completed for the

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pre-determined study period, procedure 1700 reports the business parameters for said

network architectures over the pre-determined study period. The reporting of said

business parameters comprises tabulating and graphically charting the business

parameters (block 1790) for each of the network architectures over said pre-

5   determined study period, thus, finishing the procedure 1700 (block 1795).

[0168]   Figure 21 shows an illustrative graphical output from an execution of the

OMCS tool of Figure 1. The graph 2100 plots dollars per Mbps 2110 over five years

study period 2120, year0, year1, year2, year3, and year4 for five network architectures

10   ARCH1 2130, ARCH2 2135, ARCH3 2140, ARCH4 2145, and ARCH5 2150. The

five architectures represent the five different technologies described in Figure 18

above. In graph 2100 it can be seen that the return on investment for ARCH5 2050 is

higher than the other architectures.

15   [0169]   The embodiments of this invention provide an OMCS tool that

automates the calculation of business parameters for business solutions for a

telecommunications network. A user of the OMCS tool is able to select, engineer, and

cost plurality of network architectures having various technologies and different

network, service, and customer management processes for a telecommunications

20   network. The management processes replicate today's operations and management

networks for Service Providers. The network architectures comprise NEs, CPE, and

links from the same or different equipment suppliers, and have network, service, and

customer management processes from the same or different management processes

suppliers.

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[0172]   The present invention provides an OMCS tool and method for business

solutions for a telecommunications network. It will be apparent to those with skill in

the art that modifications to the above methods and embodiments can occur without

deviating from the scope of the present invention. Accordingly, the disclosures and

30   descriptions herein are intended to be illustrative, but not limiting, of the scope of the

invention which is set forth in the following claims.

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Abstract of the Invention

An operations, management, capacity, and services (OMCS) tool and method are presented for assessing business solutions comprising alternative network architectures and management processes for a telecommunications network. The tool

5   comprises means for selecting, engineering, and costing plurality of network architectures having various technologies and management processes for the business solutions. The management processes create and establish management networks for managing the plurality of network architectures. The tool further comprises means for determining, storing, and displaying business parameters for the business solutions.

10   The business parameters comprise capital expenditure (CAPEX), operational expenditure (OPEX), and other financial statistics. The OMCS tool and method assess the business solution for an owned, a leased, or partially owned and leased telecommunications network. The business solutions comprise network architectures having network elements (NEs), customer premise equipment (CPE), and links from

15   the same or different equipment suppliers; and management networks for managing the network architectures having network, service, and customer management processes from the same or different management processes suppliers.

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